

A core of macroeconomic beliefs?

Challenge

Armonk

Jul/Aug 1997



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Authors: Alan S Blinder
Volume: 40
Issue: 4
Start Page: 36-44
ISSN: 05775132
Subject Terms: Economic models
Macroeconomics
Economic theory
Macroeconomics
Economic growth
Economic theory

Classification Codes: 9190: *US*
1110: *Economic conditions & forecasts*
9130: *Experimental/theoretical treatment*

Geographic Names: US

Abstract:

The main elements that would be included in a core macroeconomic model are discussed, as well as 2 critical failings of the macroeconomic model that has been standard in teaching intermediate macroeconomics for years. The IS curve is a functional relationship between real output and the real interest rate derived from the behavioral determinants of total spending. Textbook descriptions normally pair the downward-sloping IS curve with an upward-sloping LM curve relating real output to the nominal interest. Specifying the rate of interest as a policy instrument turns the IS curve into an aggregate demand curve. The Phillips curve relates wage or price inflation to the level of resource utilization. The suggested core model of the macroeconomy has 4 main components: 1. Prices and wages are largely predetermined in the short run and evolve according to Phillips curve-type equations. 2. Output is determined in the short run by demand. 3. Aggregate demand responds directly to fiscal policy and is interest sensitive - and thus responsive to monetary policy, which sets short-term interest rates. 4. Okun's law links output growth to changes in the unemployment rate.

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The former Federal Reserve vice chairman summarizes where the foundations of macroeconomics still stand and where they may have crumbled. He suggests that, although contractionary fiscal policies in 1993 seemed to stimulate economic growth, we do not yet have enough knowledge to add this concept to our core beliefs.

Between January 1993 and January 1996, I spent a good deal of time acting on the belief that there is a core macroeconomic model, so I certainly hope it exists.' I will outline this believable core model below, although it falls well short of perfection, leaves many questions unanswered, and is subject to substantial stochastic errors. Nonetheless, it is useful, and indeed, it is extensively used in policy analysis, where contact with reality is a necessity. This core model closely resembles, but does not quite match, the way we teach macroeconomics to beginning and intermediate (but not graduate) students.

This article briefly describes the main practical elements that would be included in a set of core beliefs, without worrying too much about their theoretical underpinnings. The article then turns to two critical failings of the macroeconomic model that has been standard, although not universal, in teaching intermediate macroeconomics for years. The question is: How does it differ from the "core model" used in policy analysis?

The IS Curve. The IS curve* is a functional relationship between real output and the real interest rate derived from the behavioral determinants of total spending—such as income, wealth, interest rates, the government budget, and so on. Here, however, we immediately encounter an embarrassing variety of theories, some of which appear to have sturdy microfoundations, that claim that business fixed investment is the principal source of the interest elasticity of spending. But the empirical evidence on the sensitivity of investment to interest rates is at best equivocal.

Nonetheless, historical observations and at least some empirical research support the notion that higher real interest rates lead to lower spending. And I can assure you that a negatively sloped IS curve is central to the Federal Reserve's thinking about how monetary policy works. Thus we have a paradox: While the interest sensitivity of business investment spending is subject to doubt, the IS relationship between aggregate demand and interest rates appears to be there. This paradox is a major motivation for the increase of research on the so-called credit channel for monetary policy. In practice, however, it appears that the slope of the IS curve may have more to do with homebuilding and consumer durables (especially automobiles) than with business investment. In a word, thirty years after Sir John Hicks's formulation, the IS curve still needs work.

The LM Curve. Textbook descriptions normally pair the downward-sloping IS curve with an upward-sloping LM curve* relating real output to the nominal interest rate. Unfortunately, there is by now a strong professional consensus that the once-reliable LM curve fell prey years ago to ferocious instabilities in both money demand and money supply—themselves the product of rapid and ongoing financial innovation. Hence the LM curve no longer plays any role in serious policy analysis, having been supplanted by the

assumption that the central bank controls the short-term nominal interest rate. It is high time we changed our teachings this way as well.

Notice, however, that while the central bank controls the nominal short-term interest rate, it is the real long-term rate that presumably matters most for spending. The distinctions between long- and short-term rates and between real and nominal rates are crucial both in principle and in practice.

Aggregate Demand and Aggregate Supply. Ignoring these distinctions for the moment, specifying the rate of interest as a policy instrument turns the IS curve into an aggregate demand curve. Many textbook expositions then add an aggregate supply curve-based, for example, on sticky nominal wages-to the picture, and portray short-run macroeconomic equilibrium as the intersection of the two. In this picture, the price level is presumed to adjust rapidly to equate aggregate demand and supply, while wages are rigid.

But this sharp dichotomy between rapid price adjustment and sluggish wage adjustment has no basis in empirical reality. Instead, both prices and wages appear to be extremely sticky. Furthermore, practical models used for short-run policy analysis do not have an upward-sloping aggregate supply function and do not solve for a market-clearing price level. Instead, both wages and prices are viewed as largely predetermined in the short run, and dynamic adjustment equations (Phillips curves) describe their evolution over time. Output, in turn, is determined by plugging the predetermined price and (if relevant) wage levels into the aggregate demand equation.

These core ideas, of course, beg one of the central questions of macroeconomic theory: Why are wages and prices so sticky? I will not attempt to answer this question here, but will simply observe that no answer seems currently to be part of the agreed-upon core of beliefs.² It's a big gap.

The Phillips Curve. The Phillips curve relates wage or price inflation to the level of resource utilization. While the LM curve has collapsed in recent years and key aspects of the IS curve are still in dispute, the empirical Phillips curve has worked amazingly well in-and, by the way, only in-the United States for decades (Gordon 1997). I call this the clean little secret of macroeconometrics. This reliable Phillips curve displays a high degree of inertia-empirically, long lags-and has the natural rate property: It is vertical in the long run.³ Because it works so well empirically, it merits a prominent place in our core model.

Okun's Law. The other truly sturdy empirical regularity, Okun's law, is even more atheoretical-if not indeed antitheoretical. This simple linear relationship between the percentage change in output and the absolute change in the unemployment rate presumably embodies productivity, labor force participation, and production function considerations-and seems, on the surface, to contradict the concavity of the latter. Nonetheless, it closes the loop between real output growth and changes in unemployment with stunning reliability.

Thus, my suggested core model of the macroeconomy has four main components: First, prices and wages are largely predetermined in the short run and evolve according to

Phillips curve-type equations. Second, output is determined in the short run by demand. Third, aggregate demand responds directly to fiscal policy and is interest sensitive-and thus responsive to monetary policy, which sets short-term interest rates. Fourth, Okun's law links output growth to changes in the unemployment rate.

From here on, however, the discussion starts to go downhill. The core beliefs start to look like precisely that-a set of beliefs rather than well-established empirical regularities. This article concludes by briefly discussing the two elements needed to bridge the gap between the nominal short-term interest rate set by monetary policy and the real long-term rates that presumably influence aggregate demand. In each case, I will argue that we may have included something in our core model that should be evicted.

The Term Structure of Interest Rates.* The expectations theory of the term structure links short-term rates to long-term rates in an elegant and intuitively appealing way. According to this theory any long-term interest rate is the appropriate weighted average of current and expected future short-term interest rates, plus a term premium. Unfortunately, the model miserably fails a variety of empirical tests (see Campbell 1995). Economists are thus in desperate need of a better model of the term structure. More than academic completeness is at stake here, for the absence of a usable empirical model of the term structure severely handicaps the conduct of monetary policy-which works its will on the economy through short-term rates of interest.

Modeling Expectations. Expectations are ubiquitous in economic behavior, as the rational expectations revolutionaries of the 1970s reminded us. In the bad old days, economic theory treated expectations in one of two highly unsatisfactory ways: as exogenous or as evolving according to some ad hoc formula, such as adaptive expectations. The former was plainly absurd; the latter often implied that forecasts were biased and inefficient.

The rational expectations revolution was supposed to fix all that and to provide economists with a theoretically grounded model of expectations. Although it may or may not have achieved this theoretically, its empirical success has been meager. Where we can measure expectations directly, they do not appear to be "rational," as economists use that term (see Lovell 1986). And at least some empirical relationships-including the term structure-seem to work better with adaptive than with rational expectations (Chow 1989).

The skeletal macroeconomic model dealt with here allowed for only one expectational variable: expected inflation, which appears on the right-hand side of the expectational Phillips curve and is the difference between nominal and real interest rates.⁴ But expectations are relevant elsewhere as well. The effects of expected future government budget deficits are one example that has assumed great practical importance in recent years.

A positive fiscal multiplier has long been part of these core beliefs. Today, however, the opposite presumption seems to have taken hold in policy circles from Washington to Brussels. Deficit reduction, we are told, promotes economic growth in the short run. But how can that be?

Two coherent lines of reasoning may lead to the unconventional conclusion that a credible change in fiscal policy that promises lower future budget deficits can stimulate the economy by producing lower long-term real interest rates today. The first is a (Keynesian) flow equilibrium argument: Promises of future fiscal contraction create rational expectations of lower real short-term rates in the future, which, via the term structure, lead to lower long-term interest rates today (see Turnovsky and Miller 1984). The second is a long-run stock equilibrium argument:

Expectations of lower future public government debt lead to lower long-run rates today.

Three points about these arguments need to be made: First, they are only theoretical possibilities, not logical necessities or established empirical findings. Until reducing the deficit stimulated growth in 1993-or at least I think that is what happened-there was no evidence that what worked in principle would actually work in practice. Note that the validity of the theoretical arguments hinges sensitively on three words in the preceding paragraph-credible, future, and expectations-none of which are directly observable. Second, the arguments make essential use of a theory of the term structure that we know to be wrong. Third, the first argument presumes that expected future short-term interest rates fall because spending is expected to be weaker in the future. So this argument is more about intertemporal shifting of demand than about fiscal stimulus. Yet the notion that what used to be called "contractionary" fiscal policies may in fact be expansionary is fast becoming part of the conventional policy wisdom, mostly on the basis of a single observation-the success of the Clinton budget plan in 1993.⁵ The answer to this question is not just of academic interest: It potentially affects the well-being of hundreds of millions of people around the globe. An answer would be a welcome addition to the core of practical macroeconomics that we should all believe.

* The IS curve is the relationship between real output and the rate of interest needed to make savings and investment equal.

* The LM curve is the relationship between real output and the rate of interest needed to make the public willing to hold the existing amount of money

* The range of short- to long-term interest rates.

Notes

1. During that time, the author was first a member of the Council of Economic Advisors and then vice chairman of the Board of Governors of the Federal Reserve System.

2. Asking About Prices: A New Approach to Understanding Price Stickiness, by Alan Blinder et al. (1997), is a book-length attempt to appraise a dozen theories of price stickiness by interviewing actual decision-makers.

3. Empirically, "in the long run" means after all the lags have worked themselves out. Thomas Sargent (1971) established long ago that a unit sum of the coefficients on lagged inflation is neither necessary nor sufficient for the natural-rate property to hold. Nonetheless, U.S. Phillips curves generally have this property

4. Actually, this difference is expected inflation plus an inflation risk premium. On inflation risk premiums,

see Campbell and Shiller (1996).

5. A companion, although somewhat contradictory idea that is also gaining adherents is that lower budget deficits boost a country's exchange rate!

For Further Reading

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ALAN S. BLINDER is Gordon S. Rentschler Memorial Professor of Economics at Princeton University and the former vice chairman of the Federal Reserve Board. This article is adapted from remarks made at the annual meeting of the American Economics Association in New Orleans, January 1997. These remarks first appeared in the May 1997 issue of *Proceedings*, published by the American Economics Association. Reprinted with permission.

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